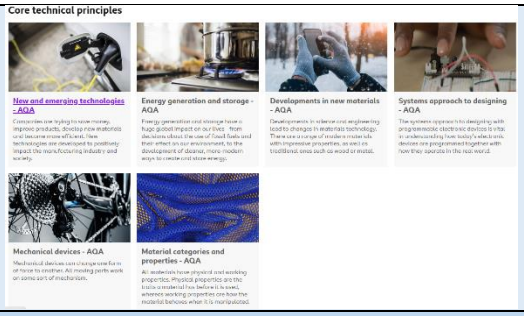
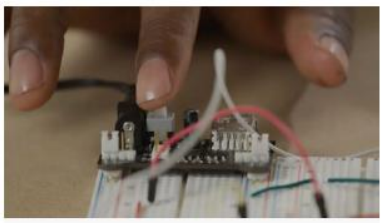
Year 11 AQA GCSE DT Revision List

Core technical principles		
New and emerging technologies Week 1	• Industry – Automation and the use of robotics • Enterprise – Crowdfunding, co-operative and fair trade • Sustainability – Finite resource, non-finite resource, ecological + social footprint, Disposal of waste • People (technology push and market pull, Culture (fashions), Society and Environment issues with new technologies • Production techniques and systems – CAD/CAM, FMS, CNC, JIT, lean manufacturing • Critical evaluation of emerging technologies – planned obsolescence, design for maintenance, ethics, The environment and end of life disposal	**Section 1** P2 – P11  https://www.bbc.co.uk/bitesize/guides/zn4bcj6/revision/1
Energy generation and storage Week 1	• Fossil fuels – Coal, natural gas and oil • Nuclear power • Renewable energy – wind, solar, tidal, water (hydroelectricity), wave and biomass • Energy storage systems – kinetic pump storage systems, mechanical energy storage, electrical energy storage	**Section 1** P12 – P13  https://www.bbc.co.uk/bitesize/guides/zf8ck2p/revision/1
Developments in new materials Week 1	• Modern materials – Graphene, metal foam, titanium, coated metals, LCD, nanomaterials, Teflon, Corn starch polymers • Smart materials – Thermochromic pigments, Shape memory alloys, photochromic pigments • Composites – Concrete, GRP, CRP • Technical textiles – conductive fabrics, fire-resistant fabrics, Kevlar, Gore-Tex, microfibers	**Section 2** P32 – P33

		 **Developments in new materials - AQA** Developments in science and engineering lead to changes in materials technology. There are a range of modern materials with impressive properties, as well as traditional ones such as wood or metal. https://www.bbc.co.uk/bitesize/guides/zfq8jty/revision/1
Systems approach to designing Week 2	• Systems approach – Input, process, output • Input devices – LDR, thermistor, switches and pressure sensors • Processes – microcontrollers • Outputs - Lamps and LEDs, buzzers and speakers	**Section 2** P24 – P27  **Systems approach to designing - AQA** The systems approach to designing with programmable electronic devices is vital in understanding how today's electronic devices are programmed together with how they operate in the real world. https://www.bbc.co.uk/bitesize/guides/z6kr97h/revision/1
Mechanical devices Week 2	• Types of movement – linear, reciprocating, rotary, oscillating • Changing magnitude and direction – levers, linkages, rotary systems, pulleys and gears	**Section 2** P28 – P31  **Mechanical devices - AQA** Mechanical devices can change one form of force to another. All moving parts work on some sort of mechanism. https://www.bbc.co.uk/bitesize/guides/zbt26yc/revision/1
Materials and their working properties Week 2	• Paper and boards – properties and uses (Paper – Bleed proof, cartridge paper, grid, layout paper and tracing paper. Boards – corrugated card, duplex board, foil-lined board, foam core board, inkjet card, solid white board) • Natural and manufactured timbers – Properties and uses - Hardwoods – Ash, beech, mahogany, oak, balsa	**Section 2** P14 – P23

	- Softwoods – Larch, Pine, Spruce - Manufactured boards – MDF, plywood, chipboard • Metals and alloys – Properties and uses - Ferrous metals – Cast iron, Low carbon steel, high carbon steel - non-ferrous metals – Aluminium, copper, zinc, tin - Alloys – Brass, stainless steel, duralumin • Polymers – Properties and uses - Thermoforming polymers – Acrylic, HIPS, HDPE, PP, PVC, PET - Thermosetting polymers – epoxy resin, MF, PF, polyester resin, UF - Polymer additives • Textiles - Natural fibres – cotton, wool silk - Synthetic fibres – Polyester, polyimide (nylon), Elastane - Blended and mixed fibres - Woven fabrics - Nonwoven fabrics – bonded, felted - Knitted textiles – Weft knit fabrics, warp knit fabrics • Material properties - Physical properties – Fusibility, electrical conductivity, thermal conductivity, resistance to moisture, absorbency - Mechanical properties – Strength, hardness, density, toughness, malleability, ductility, elasticity	 **Material categories and properties - AQA** All materials have physical and working properties. Physical properties are the traits a material has before it is used, whereas working properties are how the material behaves when it is manipulated. https://www.bbc.co.uk/bitesize/guides/zjgyb82/revision/1
Specialist areas: Timbers and Polymers		 **Timber-based materials - AQA** Hardwood and softwood are types of timber that come from many different trees. Manufactured boards such as MDF and plywood are man-made.
Selection of materials or components Week 3	• Functionality • Aesthetics • Environmental factors • Availability • Cost • Social Factors • Cultural factors • Ethical factors	**Section 3** P34- P35 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/1
Forces and stresses Week 3	• Forces acting on materials and objects – Tension, compression, shear, bending, torsion • Enhancing materials – Timber laminating, GRP, CRP	**Section 3** P36- P37 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/2

Ecological and social footprint Week 3	• Eco issues in product design/manufacture – mining, drilling, farming, deforestation, the 6 R's • Social issues in product design/manufacture, safe working conditions • Reducing the detrimental impact on others • Life cycle analysis	**Section 8** P47 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/3
Sources and origins Week 4	• Timber – Primary sources, conversion, seasoning	**Section 3** P44 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/4
Using and working with materials Week 4	• How different properties are used in commercial products • How properties influence use and performance • Modification of properties for specific purposes • How to shape and form using cutting, abrasion and addition	**Section 5** P58- P71 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/5
Stock forms, types and sizes Week 5	• Timber stock forms and timber-based components – woodscrews, hinges, knockdown fittings.	https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/6
Scales of production Week 5	• Prototype, batch production, mass production, continuous production	**Section 3** P38- P39 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/7
Specialist techniques and processes Week 5	• The use of production aids • Tools equipment and processes • Tolerances • Commercial processes • Application of quality control	**Section 3** P40- P43 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/8 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/9 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/10
Surface treatments and finishes Week 5	• Surface preparation for timber • Finishes for timber – stains, preservatives, varnish, oils, paints	**Section 5** P72- P73 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/11
Designing and making principles		
Investigation, primary and secondary data Week 6	• Use primary and secondary data to understand client needs (Market research, human factors, focus groups, product analysis, anthropometric data) • Responding to feedback	https://www.bbc.co.uk/bitesize/guides/zbn6pbk/revision/1 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/7 https://www.bbc.co.uk/bitesize/guides/zj9g4qt/revision/1
Environmental, social and economic challenge Week 6	• Deforestation • Global warming • Fair trade	**Section 8** P103 https://www.bbc.co.uk/bitesize/guides/zbn6pbk/revision/4
The work of others Week 7	• Design movements – Arts and crafts, art nouveau, art deco, modernism, post modernism, Memphis	**Section 8** P94 – P95 https://www.bbc.co.uk/bitesize/guides/zbn6pbk/revision/5

	• Past and present designers – Harry Beck, Marcel Breuer, coco Chanel, Norman Foster, Sir Alec Issigonis, Alexander McQueen, William Morris, Mary quant, Louis Comfort Tiffany, Raymond Templier, Gerrit Rietveld, Charles Rennie Makintosh, Aldo Rossi, Ettore Sottsass, Phillippe Starck, Vivienne Westwood • Past and present companies – Braun, Dyson, Apple, Alessi	
Design Strategies Week 7	• Design strategies – collaboration, user centred design, a systems approach, iterative design, avoiding design fixation, biomimicry, cultural influences	**Section 8** P104- P105 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/1 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/2
Communication of ideas Week 7	• Freehand sketching, isometric and perspective • Systems and schematic diagrams • Exploded diagrams • Working drawings	**Section 8** P108 – P111 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/3 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/4 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/5 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/6
Prototype development Week 8	• Modelling • Designing and developing • Evaluation of prototypes	**Section 8** P114 – P115 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/8 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/9 https://www.bbc.co.uk/bitesize/guides/z6jkw6f/revision/10
Materials management Week 8	• Efficient cutting & minimising waste, marking out methods, datum points and coordinates	**Section 8** P116 – P117 https://www.bbc.co.uk/bitesize/guides/zbstng8/revision/1
Specialist tools and equipment Week 8	• Laser cutters, 3d printers, CNC machines, vacuum bags, hand tools	**Section 6** P90 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/8 https://www.bbc.co.uk/bitesize/guides/zkvny4j/revision/9
Specialist techniques and processes Week 8	• Specialist techniques • Surface treatments	https://www.bbc.co.uk/bitesize/guides/zbstng8/revision/4

Useful websites: AQA Design and Technology

https://www.bbc.co.uk/bitesize/examspecs/zby2bdm

https://studyrocket.co.uk/revision/gcse-design-and-technology-aqa

https://senecalearning.com/en-GB/revision-notes/gcse/design-and-technology/aqa

https://www.gcsepod.com/students/

https://www.savemyexams.com/gcse/design-and-technology/aqa/past-papers/